

Appl. No.: 09/736,878
Filed: December 14, 2000
Amdt. dated 03/14/2006

Amendments to the Claims:

1. (Currently Amended) A network controller for digitally directing communications with a plurality of remote devices via a common bus, the network controller comprising:

a transmitter for digitally transmitting messages via the common bus;
a receiver for receiving digital messages from the common bus; and
a clock for providing clock signals to both said transmitter and said receiver,

wherein both said transmitter and receiver are capable of selectively operating in either mode selected from the group consisting of a synchronous mode and an asynchronous mode, wherein said transmitter transmits both messages and the clock signals via the common bus in the synchronous mode, and wherein said transmitter transmits messages at a predetermined bit rate without any accompanying clock signals via the common bus in the asynchronous mode,

wherein each of at least some of the remote devices are capable of operating in only one of the synchronous mode or the asynchronous mode, and wherein the selective operation of both said transmitter and receiver includes, for each of at least some of the plurality of remote devices, selectively operating in either of the synchronous mode or the asynchronous mode based upon the mode in which the respective remote device is capable of operating.

2. (Original) A network controller according to Claim 1 further comprising a clock transmitter for digitally transmitting the clock signals via the common bus, wherein said clock transmitter operates at a constant level during the asynchronous mode.

3. (Original) A network controller according to Claim 1 wherein said clock receives a baud select command that defines the predetermined bit rate at which said transmitter will transmit messages in the asynchronous mode.

4. (Original) A network controller according to Claim 1 wherein said network controller is capable of commanding a remote device to at least temporarily direct the communication with the other remote devices via the common bus.

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5. (Original) A network controller according to Claim 1 wherein said receiver asynchronously receives messages from the common bus.
6. (Original) A network controller according to Claim 1 wherein the common bus is selected from a group consisting of differential twisted copper wire, coaxial copper wire, fiber-optic cable and single-ended copper wire.
7. (Original) A network controller according to Claim 1 wherein the network controller is capable of selectively operating in either communication mode selected from the group consisting of a half-duplex communication mode and a full-duplex communication mode.
8. (Original) A network controller according to Claim 1 wherein said network controller is capable of acting as a remote device while another, master network controller directs communications with the plurality of remote devices, including the network controller, via the common bus.
9. (Previously Presented) A network controller according to Claim 8, wherein said network controller includes stack memory and random access memory (RAM), and wherein said network controller is capable of interacting with the master network controller such that, when said network controller is acting as a remote device, the master network controller is capable of selectively accessing either type of memory selected from the group consisting of the stack memory and the RAM.
10. (Original) A network controller for digitally directing communications with a plurality of remote devices via a common bus, the network controller comprising:
a transmitter for transmitting digital messages to the plurality of remote devices via the common bus at a predetermined bit rate, said transmitter being capable of altering the

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predetermined bit rate at which messages are transmitted while communicating with the plurality of remote devices; and

a receiver for receiving digital messages from the plurality of remote devices via the common bus at the same predetermined bit rate at which messages were previously transmitted to the plurality of remote devices such that said receiver is capable of receiving messages as said transmitter alters the predetermined bit rate without relying upon any clock signals.

11. (Original) A network controller according to Claim 10 wherein said transmitter transmits an example message to the at least one remote device at an altered bit rate following alteration of the predetermined bit rate.

12. (Original) A network controller according to Claim 10 wherein said transmitter receives a baud select command that defines the predetermined bit rate at which the messages will be transmitted.

13. (Currently Amended) A method for digitally communicating between a network controller and a plurality of remote devices via a common bus, the method comprising:

configuring the controller ~~based upon a~~ to selectively operate in accordance with any command protocol according to which the plurality of remote devices are capable of communicating, wherein at least some of the plurality of remote devices are capable of communicating according to ~~a only one command protocol, the command protocol being~~ selected from the group consisting of Manchester encoding and a Universal Asynchronous Receiver Transmitter (UART) protocol; and

transmitting messages between the bus controller and the plurality of remote devices according to the same command protocol with which ~~the plurality of respective~~ remote devices are capable of communicating.

14. (Original) A method according to Claim 13 wherein transmitting messages comprises transmitting messages according to the Manchester encoding command protocol if the

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plurality of remote devices are capable of communicating according to the Manchester encoding command protocol, and wherein transmitting messages according to the Manchester encoding command protocol comprises transmitting messages according to a mode selected from the group consisting of a synchronous mode and an asynchronous mode.

15. (Original) A method according to Claim 14 wherein transmitting messages in the synchronous mode comprises transmitting messages while concurrently transmitting a clock signal from the network controller to the plurality of remote devices via a common clock transmitter, and wherein transmitting messages in the asynchronous mode comprises transmitting messages at a predetermined bit rate without transmitting a clock signal.

16. (Original) A method according to Claim 14 wherein the messages comprise at least one message pulse, wherein transmitting messages according to the Manchester encoding command protocol comprises transmitting messages in the asynchronous mode, and further comprising synchronizing the messages using an edge of the message pulse.

17. (Original) A method according to Claim 13 wherein transmitting messages comprises transmitting messages according to the Manchester encoding command protocol if the plurality of remote devices are capable of communicating according to the Manchester encoding command protocol, and wherein transmitting messages according to the Manchester encoding protocol comprises transmitting messages comprised of a plurality of bits, each having a value defined by a transition between first and second states.

18. (Original) A method according to Claim 13 wherein transmitting messages comprises transmitting messages according to the Manchester encoding command protocol if the plurality of remote devices are capable of communicating according to the Manchester encoding command protocol, and wherein transmitting messages according to the Manchester encoding command protocol comprises transmitting messages comprised of a sync portion, a message body and a parity flag.

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19. (Original) A method according to Claim 18 wherein transmitting messages according to the Manchester encoding command protocol comprises transmitting messages comprised of a sync portion, a message body including an error flag bit, and a parity flag.

20. (Original) A method according to Claim 13 wherein transmitting messages comprises transmitting messages according to the UART command protocol if the plurality of remote devices are capable of communicating according to the UART command protocol, and wherein transmitting messages according to the UART protocol comprises transmitting messages at a predetermined bit rate and according to a non-return-to-zero (NRZ) bit format.

21. (Original) A method according to Claim 13 wherein transmitting messages comprises transmitting messages according to the UART command protocol if the plurality of remote devices are capable of communicating according to the UART command protocol, and wherein transmitting messages according to the UART command protocol comprises transmitting an idle pattern to reset the plurality of remote devices prior to transmitting each message.

22. (Original) A method according to Claim 13 further comprising receiving a command protocol select command at the controller such that the subsequent configuration of the controller is based upon the command protocol select command.

23. (Original) A method according to Claim 13 wherein transmitting comprises selectively transmitting messages in either communication mode selected from the group consisting of a half-duplex communication mode and a full-duplex communication mode.

24. (Currently Amended) A network controller for digitally directing communications with a plurality of remote devices via a common bus, the network controller comprising:

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a transmitter for transmitting digital messages via the common bus;
a receiver for receiving digital messages from the common bus; and
a clock for providing clock signals to both said transmitter and said receiver,
wherein both said transmitter and receiver are capable of selectively operating in
accordance with any command protocol selected from the group consisting of Manchester
encoding and Universal Asynchronous Receiver Transmitter (UART) protocol, wherein said
transmitter and receiver are responsive to a command protocol select command that identifies the
command protocol according to which the plurality of remote devices are capable of
communicating such that said transmitter and receiver thereafter transmit and receive messages,
respectively, in accordance with the command protocol identified by the protocol select
command, each of at least some of the plurality of remote devices being capable of
communicating according to only one of Manchester encoding or the UART protocol.

25. (Original) A network controller according to Claim 24 wherein said transmitter,
while operating in accordance with the Manchester encoding command protocol, transmits
messages according to the Manchester encoding command protocol, and wherein said transmitter
transmits Manchester encoded messages according to a mode selected from the group consisting
of a synchronous mode and an asynchronous mode.

26. (Original) A network controller according to Claim 25 wherein said transmitter
transmits messages in the synchronous mode while concurrently transmitting a clock signal to
the plurality of remote devices via a common clock bus, and wherein said transmitter transmits
messages in the asynchronous mode at a predetermined bit rate without transmitting a clock
signal.

27. (Original) A network controller according to Claim 24 wherein said transmitter
transmits Manchester encoded messages comprised of a plurality of bits, each bit having a value
defined by a transition between first and second states.

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28. (Original) A network controller according to Claim 24 wherein said transmitter transmits Manchester encoded messages comprised of a sync portion, a message body and a parity flag.

29. (Original) A network controller according to Claim 24 wherein said transmitter transmits messages according to the UART protocol at a predetermined bit rate and utilizing a non-return-to-zero (NRZ) bit format.

30. (Original) A network controller according to Claim 24 wherein said transmitter, while operating in accordance with the UART command protocol, transmits an idle pattern to reset the plurality of remote devices prior to transmitting each message.

31. (Original) A network controller according to Claim 24 wherein said transmitter transmits messages via the common bus selected from a group consisting of differential twisted copper wire, coaxial copper wire and fiber-optic cable.

32. (Original) A network controller according to Claim 24 wherein the network controller is capable of selectively operating in either communication mode selected from the group consisting of a half-duplex communication mode and a full-duplex communication mode.

33. (Currently Amended) A network controller for digitally directing communications with a plurality of remote devices via a common bus, the network controller comprising:

a transmitter for transmitting digital messages via the common bus, said transmitter adapted to transmit messages comprising a command and an address of at least one remote device, said transmitter being further adapted to simultaneously transmit messages to a plurality of remote devices in accordance with a group address comprised of a plurality of bits with each bit associated with a respective group of remote devices, thereby enabling said transmitter to

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direct a message to a group of remote devices by setting the respective bit of the group address;
and

a receiver for receiving digital messages from the common bus.

34. (Original) A network controller according to Claim 33 wherein said transmitter is also adapted to transmit messages to individual remote devices in accordance with a unique logical addresses assigned to the plurality of remote devices.

35. (Original) A network controller according to Claim 34 wherein said transmitter is also adapted to transmit messages to all of the plurality of remote addresses in accordance with a global address.

36. (Currently Amended) A network controller for digitally directing communications with a plurality of remote devices via a common bus, the network controller comprising:

a transmitter for digitally transmitting messages via the common bus; and
a receiver for receiving digital messages from the common bus,

wherein the transmitter is capable of transmitting an indefinitely repeating sequence of predetermined messages via the common bus, the transmitter being capable of repeating the sequence without interruption to the transmitter transmitting other messages via the common bus, wherein the receiver is capable of receiving an indefinitely repeating sequence of messages from the common bus, and wherein the network controller is capable of altering the predetermined messages as the transmitter transmits messages and the receiver receives messages.

37. (Original) A network controller according to Claim 36 further comprising a clock for providing clock signals to both said transmitter and said receiver, wherein both said transmitter and receiver are capable of selectively operating in either mode selected from the group consisting of a synchronous mode and an asynchronous mode, wherein said transmitter

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transmits both the messages and the clock signals via the common bus in the synchronous mode, and wherein said transmitter transmits the messages at a predetermined bit rate without any accompanying clock signals via the common bus in the asynchronous mode.

Claims 38-42 (Cancelled).